

WHAT IS CLAIMED IS:

1. A system comprising:
  - a field defining element (FDE) that generates a field height of an illumination beam;
  - a first zoom system that allows for changing of the field height of the illumination beam;
  - a pupil defining element (PDE) that generates a pupil of the illumination beam; and
  - a second zoom system that allows for changing of the pupil of the illumination beam, whereby the illumination beam is used to illuminate an object plane.
2. The system of claim 1, wherein:
  - the FDE and the PDE are diffractive optical elements.
3. The system of claim 1, wherein:
  - the FDE and the PDE are refractive optical elements.
4. The system of claim 1, further comprising:
  - a relay system positioned before the object plane.
5. The system of claim 1, further comprising:
  - a beam homodigization device positioned so that the illumination beam is homogenized before being received by either the FDE or the PDE.
6. The system of claim 1, wherein the FDE is positioned closer to the object plane than the PDE.
7. The system of claim 1, wherein the PDE is positioned closer to the object plane than the FDE.

8. The system of claim 1, further comprising a pattern generator positioned in the object plane.
9. The system of claim 1, further comprising one of a reticle, a contrast device, and a spatial light modulator positioned in the object plane.
10. The system of claim 1, further comprising a reflective pattern generator positioned in the object plane.
11. The system of claim 1, further comprising a transmissive pattern generator positioned in the object plane.
12. The system of claim 1, wherein the first zoom system changes the field height up to about 2.5 times to about 4 times an original field height.
13. The system of claim 1, wherein the second zoom system changes the pupil up to about 4 times to about 5 times an original pupil.
14. The system of claim 1, further comprising:  
a detection system that measures a wavefront of the illumination beam, which is used to control a zoom value for at least one of the first and second zoom systems.
15. The system of claim 1, further comprising:  
a detection system that measures a characteristic of the illumination beam, which is used to control a zoom value for at least one of the first and second zoom systems.

16. A system comprising:
  - means for varying a field height of an illumination beam; and
  - means for varying a pupil of the illumination beam, such that radiometric efficiency is continuously maintained.
17. The system of claim 16, further comprising:
  - means for relaying the illumination beam.
18. The system of claim 16, further comprising:
  - means for measuring a characteristic of the illumination beam and generating a control signal; and
  - means for controlling at least one of the means for varying the field height and the means for varying the pupil based on a value of the control signal.
19. A method comprising:
  - (a) varying a field height of an illumination beam; and
  - (b) varying a pupil of the illumination beam, such that radiometric efficiency is maintained.
20. The system of claim 19, further comprising:
  - (c) relaying the illumination beam.
21. The system of claim 19, further comprising:
  - (c) measuring a characteristic of the illumination beam;
  - (d) generating a control signal based on the measuring; and
  - (e) controlling at least one of steps (a) or (b) based on a value of the control signal.